

PATENT SPECIFICATION

637.832



Date of filing Complete Specification (under Section 16 of the Patents and Designs Acts, 1907 to 1946): Nov. 11, 1948.

Application Date: Nov. 17, 1947.

No. 30494/47.

Application Date: March 15, 1948

No. 7805/48.

Complete Specification Published: May 24, 1950.

Index at acceptance: —Class 6(iii), C6j.

PROVISIONAL SPECIFICATION

No. 30494, A.D. 1947.

Improvements in or relating to Lawn Mowers

I, FRANK RAYMOND FABER RAMSAY, a British Subject, of Denton Lodge, Christchurch Road, East Sheen, London, S.W.14, do hereby declare the nature of this invention to be as follows:—

This invention relates to lawn mowers and is concerned with the type of lawn mower in which the grass is cut by cutting means rotatable about a vertical axis, the function of the cutting means depending on its being rotated above a predetermined minimum speed of rotation.

When cutting grass with a lawn mower of the type described it is known that due to the presence of different types of grass and to variation in height, thickness and toughness thereof it is not possible to cut the grass to the predetermined length, while advancing the mower at a uniform rate, unless the motor has sufficient power to maintain the velocity of the cutter blades above the minimum cutting speed even when encountering the maximum resistance.

This necessitates the use of a motor which is much heavier than would be necessary for the average conditions encountered, and makes the design of a light machine impossible, unless its use is restricted to light work.

The object of this invention is to provide a lawn mower of the type preferred to in which the above disadvantage is absent and the invention involves the use of a basic principle, that when utilising a mechanism whose functioning depends on the attainment of a certain minimum speed of rotation, the resistance encountered must be regulated so as not to exceed the force available to drive the operating mechanism above the minimum speed.

A lawn mower of the type described according to the present invention comprises a casing in which the driving motor and cutting means are mounted, the casing being mounted on rollers or the like arranged fore and aft of the cutting

circle and a rearwardly extending propelling handle which is so mounted with respect to the casing that a downward force applied to the handle is transmitted thereby to the casing to cause the casing to tilt about the rear roller or the like and thus raise from the ground the cutting means.

The handle may be pivotally mounted on any convenient part of the mower, and is preferably of such a length and the rear end so weighted that it counterbalances, or almost counter-balances, the weight of the mower, the rear roller acting as a fulcrum; preferably also the casing carries means for limiting the downward pivotal movement of the handle.

The means for limiting the downward pivotal movement of the handle may comprise a flexible link between the casing and the handle or a rigid stop carried by the frame adjacent to the pivot.

In the preferred form of construction the mower comprises a frame fast with which are two spindles one at the front and the other at the back, on which spindles rollers are rotatably mounted. The frame carries a casing in which is mounted a driving motor and the cutting means, which comprise a number of blades loosely pivoted in the horizontal plane on a plate or disc member mounted on the vertically disposed drive shaft of the motor. Pivotaly mounted on the rear roller spindle is a rearwardly extending propelling handle which is connected to the casing by a flexible link such as a chain. The rollers are so positioned with respect to the casing and cutting blades that one roller is forward of, and the other roller aft of the cutting circle, and it is the aft roller spindle on which the handle is pivoted. It will be appreciated that the mower can be moved backwards and forwards across the grass to be cut by a force applied to the handle in approximately a horizontal plane. When the motor is started the plate like member is rotated

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and the blades, due to centrifugal force, are maintained in a radial position, the arrangement being such that the blades only perform a cutting function provided the speed of rotation of the motor is above a predetermined minimum. During the cutting of the grass should the blades meet grass which offers such a resistance thereto as to tend to cause the speed of rotation of the blades to drop below the predetermined minimum at which they will function, the person using the mower, in order to reduce the increased resistance, applies a downward force to the handle in a plane at an angle to the horizontal, thus causing the casing to be tilted so that the axis of the drive shaft and plate member is tilted, thus raising the cutter blades from the increased resistance, so that the speed of rotation of the motor is prevented from falling below the predetermined minimum speed. The mower is re-passed over the spot while being gradually lowered back to its normal position, the cutters removing short sections of grass at each passage until the

horizontal plane is reached again.

In order to obtain the best possible results with a lawn mower constructed in accordance with the present invention the lawn mower is used in a manner similar to an electric vacuum machine, that is to say the mower is pushed backwards and forwards over the area to be cut, the cutting blades acting not originally on the base of the grass to be cut, but continually chopping off short lengths of the grass, thus not allowing great resistance to be offered to cutting by the grass, and since the grass cut is only of very short length it is not necessary to provide on the lawn mower any collecting box, since the short lengths can be allowed to fall on to the ground and, being of such short lengths, will not be unsightly and will eventually act similar to a fertilizer to increase the richness of the soil.

Dated this 17th day of November, 1947.

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PROVISIONAL SPECIFICATION No. 7805, A.D. 1948.

Improvements in or relating to Lawn Mowers

I, FRANK RAYMOND FABER RAMSAY, a British Subject, of Denton Lodge, Christchurch Road, East Sheen, London, S.W.14, do hereby declare the nature of this invention to be as follows:—

This invention relates to lawn mowers and is concerned with the type of lawn mower in which the grass is cut by cutting means rotatable about a vertical axis, the function of the cutting means depending on its being rotated above a predetermined minimum speed of rotation.

When cutting grass with a lawn mower of the type described it is known that due to the presence of different types of grass and to variation in height, thickness and toughness thereof it is not possible to cut the grass to the predetermined length, while advancing the mower at a uniform rate, unless the motor has sufficient power to maintain the velocity of the cutter blades above the minimum cutting speed even when encountering the maximum resistance.

This necessitates the use of a motor which is much heavier than would be necessary for the average conditions encountered, and makes the design of a light machine impossible, unless its use is restricted to light work.

The chief object of this invention is to provide a lawn mower of the type referred to in which the above disadvantages are absent and the invention involves the use

of a basic principle, that when utilising a mechanism whose functioning depends on the attainment of a certain minimum speed of rotation, the resistance encountered must be regulated so as not to exceed the force available to drive the operating mechanism above the minimum speed.

A lawn mower of the type described, according to the present invention, comprises a casing in which the driving motor and cutting means are mounted, the casing being mounted on rollers arranged fore and aft of the cutting circle and a rearwardly extending propelling handle which is so mounted with respect to the casing and rear roller that it counter-balances or almost counter-balances the weight of the mower about the rear roller, so that a minimum downward force applied to the handle will tilt the casing about the rear roller as a fulcrum and thus raise from the ground the cutting means, and also to insure that in the normal untitled position of the mower, the weight on the front roller will be reduced to a minimum.

The said handle may be pivotally mounted at its lower end on any convenient part of the mower and means provided for limiting the downward pivotal movement of the handle, such means conveniently comprising a flexible link between the casing and the handle or a

rigid stop carried by the casing or frame adjacent to the pivot.

In the preferred form of construction the mower comprises a frame fast with which are two spindles one at the front and the other at the back, on which spindles rollers are rotably mounted. The frame carries a casing in which is mounted a driving motor and the cutting means, which comprise a plurality of blades loosely pivoted in the horizontal plane on a plate or disc member mounted on the vertically disposed drive shaft of the motor. Pivottally mounted on the rear roller spindle is a rearwardly extending propelling handle which is connected to the casing by a flexible link such as a chain. The rollers are so positioned with respect to the casing and cutting blades that one roller is forward of, and the other roller aft of the cutting circle, and it is the aft roller spindle on which the handle is pivoted.

The said rearwardly extending propelling handle is of such a length and weight and/or the rear end so weighted that it counter-balances or almost counter-balances the weight of the mower about the rear roller so that a minimum downward force applied to the handle will tilt the casing about the rear roller as a fulcrum and thus raise from the ground the cutting means and to insure that in the normal untilted position of the mower, the weight on the front roller will be reduced to a minimum for the purpose as hereinafter explained.

It will be appreciated that the mower can be moved backwards and forwards across the grass to be cut by a force applied to the handle in approximately a horizontal plane. When the motor is started the plate like member is rotated and the blades, due to centrifugal force, are maintained in a radial position, the arrangement being such that the blades, co-acting with the inertia of the grass, only perform a cutting function provided the speed of rotation of the motor is above a predetermined minimum. During the cutting of the grass should the blades meet grass which offers such a resistance thereto as to tend to cause the speed of rotation of the blades to drop below the predetermined minimum at which they will function, the person using the mower, in order to reduce the increased resistance, applies a downward force to the handle in a plane at an angle to the horizontal, thus causing the casing to be tilted so that the axis of the drive shaft and plate member is tilted, thus raising the cutter blades from the increased resistance, so that the speed of rotation of the motor is prevented from falling below the

predetermined minimum speed. The mower is re-passed over the spot while being gradually lowered back to its normal position, the cutters removing short sections of grass at each passage until the horizontal plane is reached again.

The counter-balance arrangement provided by the handle not only facilitates the tilting of the casing to raise the cutter blades from the ground, as above described, but it also insures that, when using the mower in the normal untilted position, the weight on the front roller will be reduced to a minimum. This factor, with a mower of the type concerned, is most important as if any material weight of the mower is taken by the front roller, such roller will flatten out the grass which will not spring up in time to be cut after the passage thereof of said front roller.

The mounting of the casing on fore and aft rollers insures that the mower and the cutters are maintained in a level plane when passing along the edges of lawns or over depressions in the surface thereof.

The pivotal mounting of the handle as above described insure that the operator can conveniently impart a backward and forward movement to the mower.

The motor, preferably an electric motor, for driving the cutter blades is of a type to rotate the cutters at a speed as high as possible compatible with practicability, thereby enabling a light weight motor to be employed and thus reducing the overall weight of the mower and increasing its handiness in use.

With a cutter radius of 6" the r.p.m. of the motor should not be less than about 6,000 r.p.m. nor exceed about 12,000 r.p.m., such revolutions giving a linear speed of cutter tip of $(\pi XD \times \text{r.p.m.})$.

In view of the high cutter speeds involved there may be provided additional means to insure that the revolutions of the motor will be maintained in the event of the cutters encountering obstruction, such as thick or long grass, with which the cutters cannot deal.

Such additional means comprises a cutter holder in the form of a smooth disc free from protuberances, which is mounted within the mower frame and rotatable about a vertical axis, and a plurality of cutters, conveniently two, each pivotally mounted on a vertical pivot on the said holder to swing outwardly thereof by centrifugal force due to the rotation of the holder, each cutter being counter-balanced about its pivot to an amount such that in the event of the fully extended cutter encountering a resistance sufficient to force the cutter back towards its retracted position within the circum-

ference of the said holder, the force tending to restore the cutter to its operative position decreases more rapidly than the force tending to retract the cutter to an inoperative position.

The arrangement is such that immediately the fully extended cutter encounters a resistance which it cannot overcome at a predetermined minimum speed of rotation, the cutter is immediately displaced about its pivot to its fully retracted position, thereby enabling the required minimum number of revolutions to be maintained.

Owing to the high speed involved the cutters employed are of plain straight formation to avoid stresses due to centrifugal action being set up in the cutters and also loss of power to fanning.

To effect a further reduction in fanning and also to afford a protection to the cutters when retracted, the cutters may be each mounted in an annular housing formed integrally in the circumferential edge and thickness of the said disc.

Alternatively the said housing may be built up by a composite disc comprising a main disc secured to the driving shaft, said main disc having the cutters mounted on vertical pivots depending from the under face thereof, and a cover disc co-extensive with and secured in distanced relation to the said main, so as to provide an annular housing for the cutters.

The mower casing preferably comprises an upper or top portion of substantially circular dome form, and a peripheral vertically depending side valance member which is provided with a cut grass outlet at the right hand side, the said valance member being primarily to insure a discharge of cut grass on the right hand side of the machine with the cutters rotating in a clockwise direction, and also to minimise the possibility of stones being flung out of the mower and injuring the operator, or other near-by persons.

The lower edge of the side casing

member at the rear is level with or in the plane of rotation of the cutters to insure that when the machine is moved backwards the minimum amount of grass is cut and that which is cut is carried round to the front of the casing by the rotation of the cutter and is ultimately discharged through the said outlet when the mower is again moved forward.

The rear portion of the said side casing member is of semi-circular form and the clearance therebetween and the cutters is reduced to a minimum compatible with the non-fouling of the said portion and cutters by irregularities therein and foreign bodies, such as stones.

The lower edge of the front portion of the side casing member is sufficiently above the plane of rotation of the cutters to insure that the grass which is deflected by the forward passage of the front roller and the said front portion, is able to spring upright before the cutters engage same.

In order to obtain the best possible results with a lawn mower constructed in accordance with the present invention, the lawn mower is used in a manner similar to an electric vacuum machine, that is to say the mower is pushed backwards and forwards over the area to be cut, the cutting blades acting not originally on the base of the grass to be cut, but continually chopping off short lengths of the grass, thus not allowing great resistance to be offered to cutting by the grass, and since the grass cut is only by very short lengths it is not necessary to provide on the lawn mower any collecting box, since the short lengths can be allowed to fall on to the ground and, being of such short lengths, will not be unsightly and will eventually act similar to a fertilizer to increase the richness of the soil.

Dated this 15th day of March, 1948.

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COMPLETE SPECIFICATION

Improvements in or relating to Lawn Mowers

I, FRANK RAYMOND FABER RAMSAY, a British Subject, of Denton Lodge, Church Road, East Sheen, London, S.W.14, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to manually propelled lawn mowers of the kind comprising a high speed motor adapted to rotate

a rotor mounted for rotation about a vertical axis, said rotor carrying a plurality of cutters each comprising a flat cutting blade loosely pivoted on a vertical pivot on the rotor so as to swing, and to be normally maintained, outwardly thereof in an operative position by centrifugal force and to retract momentarily inwardly in opposition to the centrifugal force should an abnormal resistance be encountered. The cut is thus effected by a scythe action

as distinct from a scissor or shear action.

In operation a lawn mower will encounter grass and other herbage of varied height, thickness and toughness. 5 Therefore previously known lawn mowers of the type referred to were equipped with a motor having sufficient power to maintain the minimum necessary speed of rotation even when the cutters encountered maximum resistance. This had the disadvantage of necessitating the use of a motor which was much heavier than required for average conditions of grass and made the design of a light machine impossible, unless its use was restricted to light work. 10

Lightness of construction is of particular importance for lawn mowers of the type concerned, as a heavy machine will tend to flatten the grass and thus place it out of the reach of cutters, require greater effort to propel and generally be less manoeuvrable than a light machine. In addition lightness of construction reduces the cost of manufacture. 20 25

The object of the present invention is to provide a lawn mower of the type referred to which is of light construction and avoids the above described disadvantages of the previously known machines. It involves the use of the basic principle than when utilising a mechanism whose function depends on the attainment of a minimum necessary speed of rotation, the resistance encountered must be regulated so as not to exceed the force available to drive the operating mechanism above said minimum speed. 30 35

The weight of a motor, for any given horse power, is in inverse ratio to the speed of the motor. Hence to reduce the weight of the mower it is desirable to employ a high speed motor of about $\frac{1}{2}$ th to $\frac{1}{4}$ th H.P. and of a type which will rotate the cutters at a speed as high as possible compatible with practicability. 40 45

As an example, with a cutter radius of 6" the r.p.m. of the motor should not be less than about 6,000 r.p.m. nor exceed about 12,000 r.p.m., such revolutions giving a linear speed of cutter tip of $\pi(D)(r.p.m.)$. By employing a suitable alloy, such as aluminium alloy, the present invention enables a light weight mower, not exceeding 25 lbs. in weight, to be constructed. 50 55

The lawn mower, according to the present invention, is of the kind above set forth, and is characterised by the provision of a frame supporting the high speed motor and the cutting means, said frame being mounted on rollers (or wheels) arranged fore and aft of the cutting circle and being provided with a propelling handle which extends upwardly and rear- 60 65

wardly over the aft roller (or wheels) so that by reason of its weight it counterbalances at least a part of the moment of the weight of the mower about the axis of the aft roller (or wheels), and said handle being so connected to the frame that downward pressure on the handle may be made to cause the mower to tilt about the axis of the aft roller (or wheels) as a fulcrum to raise the cutting blades from their normal operating position close to the ground, thereby reducing the resistance encountered by the blades in cutting long or thick grass so that a motor of less power than would otherwise be necessary to maintain the minimum speed of rotation of the cutters may be employed. 70 75 80

In cutting long or thick grass which offers too great a resistance to the cutters when the mower is advanced in a normal horizontal manner, the mower is tilted about its rear roller or wheels so that the cutters progressively cut off short lengths of the grass downwardly from the top thereof. As the grass is planed down the mower is progressively lowered until it rests evenly on both front and rear rollers or wheels. 85 90

Each cutter is preferably counterbalanced by a tail portion so as to facilitate the inward retraction of the cutter in the event of an abnormal resistance being encountered. 95

Preferably the mower is provided with a rear semi-circular valance concentric with the axis of rotation of the cutters and located as close as possible to the cutting circle without fouling the cutters. 100

The provision of this valance ensures the discharge of the cut grass on one side only of the mower, the right side with cutters rotating clockwise and the left side with anti-clockwise rotation of the cutters. 105 110

The discharge of the cut grass on one side only enables the mower to be advantageously used in a manner similar to an electric vacuum machine. That is to say the mower is moved backwards and forwards and at the same time moved progressively to the side on which the cut grass is discharged. This action re-cuts the cut grass many times into even finer particles which, owing to their fineness, can be allowed to remain on the ground, without being unsightly, to increase the fertility of the soil, and the provision of a collecting box is unnecessary. 115 120

Whilst generally it is proposed to mount the mower on two rollers provided one at the front and one at the back, each roller may, if desired, be replaced by a pair of wheels arranged abreast. 125

In order that the invention may be 130

clearly understood and readily carried into effect reference will now be made to the accompanying drawings which illustrate a preferred form of the invention by way of example. In the drawings:—

Fig. 1 is a perspective view of the complete mower;

Fig. 2 is a side view of the mower with a part of the handle broken away showing the mower tilted away from the ground;

Fig. 3 is a plan view of the mower again with the handle broken away;

Fig. 4 is a sectional side view of the mower drawn to a larger scale with a part of the handle broken away;

Fig. 5 is an enlarged view of the cutting mechanism shown in Fig. 4; and

Fig. 6 is an inverted plan view, slightly in perspective, of the mower showing the cutting mechanism and its position relative to the side valance of the frame.

Referring to the drawings the mower comprises a main frame or casing 1 having two integral front frame members 2 provided one at each side for receiving therebetween a forward ground roller 3, and two rearwardly directed frame members 4, also provided one at each side of the casing, for receiving between them a rear ground roller 5. Each roller 3 and 5 may if desired be replaced by a pair of wheels arranged abreast.

Each of the frame members 2 and 4 has a downwardly depending arcuate end portion which is formed on its underside with arcuate recesses 3b (see Fig. 4) constituting bearing surfaces which rest on the projecting ends of the roller or wheel spindles 3a and 5a so that by locating the said spindles in one or other of the recesses the height of the cutting mechanism above the ground can be adjusted to suit requirements. The projecting ends of the spindles 3a and 5a are retained in the selected of the recesses by screws 6 each of which (when slackened) is movable in a longitudinal slot formed in each frame member 2 and 4, but not visible in the drawings, and carries with it the spindle end which is urged into an aligned recess when the screw 6 is tightened down on to an arcuate cover cap 7 closing the top of said longitudinal slot.

As shown, the casing 1 comprises a roof 1a and a depending valance member comprising a rear valance 1b and a front valance 1c. The roof 1a is formed towards the rear of the frame with a hollow boss constituting a circular compartment 8 in which an electric motor 9 is accommodated for driving the cutting mechanism.

The cutting mechanism, as shown more clearly in Figs. 4 and 6, comprises a cutter holder or rotor in the form of a smooth disc 10, free from protuberances,

which is mounted in the casing 1 on the motor spindle 11 just below the lower end of the compartment 8 so as to rotate about a vertical axis.

A plurality of cutters 12, conveniently two, are each loosely pivoted in a horizontal plane on a vertical pivot 13 on the holder 10 so that each cutter is adapted to swing and to be maintained radially outwards thereof by centrifugal force due to the rotation of the holder. Each cutter is counter-balanced by a tail portion 12a about its pivot 13 to such an amount that in the event of the extended cutter encountering abnormal resistance the resultant pressure on the cutter will force same inwardly momentarily to its retracted position, as shown in broken lines in Fig. 6, in opposition to the centrifugal force.

The arrangement is such that immediately a fully extended cutter 12 encounters a resistance which it cannot overcome at a predetermined minimum speed of rotation, the cutter is immediately and momentarily displaced about its pivot 13 to its fully retracted position, as shown in broken lines in Fig. 6, thereby enabling the required minimum number of revolutions to be maintained.

Owing to the high speed involved, the cutters 12 employed are of plain straight formation to avoid stresses due to centrifugal action being set up in the cutters and also loss of power due to fanning by the cutters themselves.

With clockwise rotation of cutters and the mower moving in a forward direction, the cut grass tends to discharge tangentially and to the right side of the mower. Conversely when the mower is moved rearwardly, the cut grass tends to discharge tangentially forwardly and to the left side of the mower. With anti-clockwise rotation of the cutters, the cut grass is discharged on the left and right side respectively of the mower when the mower is moved in a forward and backward direction.

To ensure the discharge of the cut grass on one side only of the mower (say the right side with a clockwise rotation of cutters as in the example illustrated herein) irrespective of its movement forward or backward, there is provided around the rear of the mower casing a depending rear semi-circular valance 1b concentric with the axis of rotation of the cutters. This rear semi-circular valance is located as close as possible to the cutting circle 11a consistent with sufficient clearance being left to avoid fouling by the cutters.

Preferably, in addition to this rear semi-circular valance 1b, there is also provided a front valance 1c which is con-

nected or continuous with the end of rear valance 1b on the left side of the mower casing. The said front valance 1c extends, as more particularly shown in Fig. 6, from the left side of the mower casing, somewhat in the form of a volute curve, around the front and to the right side of the casing, where it terminates at 1d, outside the radius of the said semi-circular rear valance 1b, so as to provide a rearwardly located discharge opening 14.

The said front valance 1c is forwardly distanced F from the cutting circle 11a (see Fig. 6), whereby grass flattened by the front valance and/or the front roller during the forward passage of the mower will have an opportunity of springing up so as to be engaged by the cutters.

The front valance 1c prevents the possibility of a small quantity of the cut grass being discharged in a forward direction and acts as a positive guide to direct the cut grass to the discharge opening 14.

In addition the front valance and also the rear valance constitute guards against flying stones which may be projected by the rapidly revolving cutters.

The upper part of the casing 1 is closed by a top portion 15 of substantially circular dome form.

Pivotaly mounted on pivots 16 between the rear frame members 4 is a U shaped handle receiving member 17, which is provided with stop lugs 17a (see Fig. 6), which engage at extreme positions of swing of the handle with the under-surface of the rear frame members 4 adjacent to the pivots 16. The crossbar 18 of the said member 17 is formed centrally between its ends with a spigot 19 for receiving the lower open end of a tubular handle 20, this lower open end of the handle being fitted with an electric socket (not shown) adapted to engage with a plug 21 connected to a lead 22 passing to the electric motor 9. A lead 23 (see Fig. 1) from the socket extends upwardly through the tubular handle 20 through the top thereof and is adapted at its free end for connection to an electric supply point.

The rearwardly extending propelling handle 20 is of such length and weight and/or the rear end is so weighted that it counter-balances or almost counter-balances the weight of the mower about the rear roller 5 so that a minimum downward force applied to the handle 20 will tilt the casing about the rear roller 5 as a fulcrum and thus raise from the ground the cutting means. In addition this counter-balancing ensures that the weight on the front roller 3 is reduced to a minimum for the purpose hereinafter explained.

It will be appreciated that the mower

can be moved backwards and forwards across the grass to be cut by a force applied to the handle 20 in approximately a horizontal plane. When the motor 9 is started the rotor 10 is rotated and the blades 12, due to centrifugal force, are maintained in a radial position, the arrangement being such that the blades 12, co-acting with the inertia of the grass, only perform a cutting function provided the speed of rotation of the motor 9 is above a predetermined minimum. During the cutting of the grass should the blades 12 meet grass which offers such a resistance thereto as to tend to cause the speed of rotation of the blades to drop below the predetermined minimum at which they will function, the person using the mower in order to reduce the increased resistance, applies a downward force to the handle 20 in a plane at an angle to the horizontal, thus causing the casing 1 to be tilted (see Fig. 2) so that the axis of the motor spindle 11 and rotor 10 is tilted, thus raising the cutter blades 12 from the increased resistance, so that the speed of rotation of the motor 9 is prevented from falling below the predetermined minimum speed. The mower is re-passed over the spot while being gradually lowered back to its normal position, the cutters 12 progressively removing short sections of grass at each passage until the horizontal plane is reached again.

The counter-balance arrangement provided by the handle 20 not only facilitates the tilting of the casing 1 to raise the cutter blades 12 from the ground, as above described, but it also ensures that, when using the mower in the normal untilted position, the weight supported by the front roller 3 will be reduced to a minimum. This factor, with a mower of the type concerned, is most important as if any material weight of the mower is taken by the front roller 3, such roller will flatten out the grass which will not spring up in time to be cut after the passage thereof of said front roller.

The mounting of the casing 1 on fore and aft rollers 3 and 4 ensures that the mower and the cutters 12 are maintained in a level plane when passing along the edges of lawns or over depressions in the surface thereof.

The pivotal mounting of the handle 20 as above described ensures that the operator can conveniently impart a backward and forward movement to the mower.

According to a modification, not illustrated, to effect a further reduction in fanning by the blades 12 and also to afford a protection to the cutters when retracted, the cutters 12 may be each

mounted in an annular housing formed integrally in the circumferential edge and thickness of the said disc.

Alternatively, the said housing may be built up by a composite disc comprising a main disc secured to the driving shaft, said main disc having the cutters mounted on vertical pivots depending from the under face thereof, and a cover disc co-extensive with and secured in distanced relation to the said main disc, so as to provide an annular housing for the cutters.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A lawn mower of the kind set forth, characterised by the provision of a frame supporting the high speed motor and the cutting means, said frame being mounted on rollers (or wheels) arranged fore and aft of the cutting circle and being provided with a projecting handle which extends rearwardly and upwardly over the aft roller (or wheels) so that by reason of its weight it counter-balances at least a part of the moment of the weight of the mower about the axis of the aft roller (or wheels), and said handle being so connected to the frame that downward pressure on the handle may be made to cause the mower to tilt about the axis of the aft roller (or wheels) as a fulcrum to raise the cutters from their normal operating position close to the ground, thereby reducing the resistance encountered by the blades in cutting long or thick grass so that a motor of less power than would otherwise be necessary to maintain the minimum speed of rotation of the cutters may be employed.

2. A lawn mower according to Claim 1, in which each cutter is counter-balanced by a tail portion so as to facilitate the inward retraction of the cutter in the event of an abnormal resistance being encountered.

3. A lawn mower according to either of the preceding claims, provided with a rear semi-circular valance concentric with the axis of rotation of the cutters and located as close as possible to the cutting circle without fouling the cutters.

4. A lawn mower, according to Claim 1, 2 or 3, in which the said frame comprises or has mounted thereon a casing approxi-

mately circular in plan and provided around its periphery with a depending valance member consisting of a rear semi-circular valance concentric with the axis of rotation of the cutters and located as close as possible to the cutting circle without fouling the cutters, and a front valance which extends in continuity from one end of said rear valance and in the direction of rotation of the cutters, somewhat in the form of a volute curve, around the front of the casing and to the other side thereof where it terminates outside the radius of the said rear valance and adjacent the other end thereof so as to provide a substantially rearwardly directed discharge opening, the said front valance being forwardly distanced from the cutting circle so that grass, flattened by the forward passage of the mower, will have an opportunity of springing up to be engaged by the cutters.

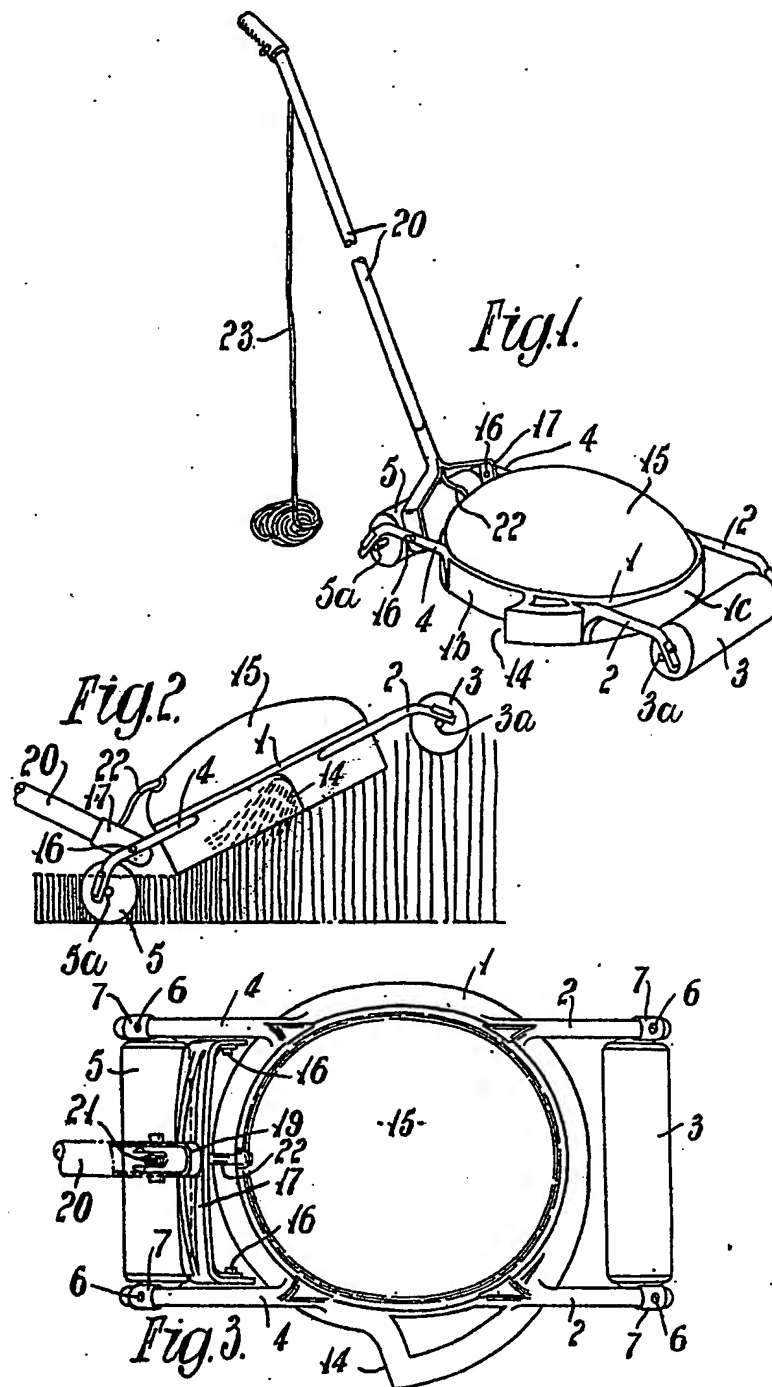
5. A lawn mower, according to any of the preceding claims, which is provided with front frame members provided one at each side for receiving therebetween a forward ground roller (or wheels) and the rear part of the casing with two rearwardly directed frame members provided one at each side of the casing for receiving therebetween a rear ground roller (or wheels), each of said frame members being provided with a downwardly depending arcuate end portion which is provided on its under-surface with arcuate recesses into the selected of which the ends of the roller (or wheels) spindles can be engaged and retained to vary the height of the cutting mechanism above the ground.

6. A lawn mower according to any of the preceding claims wherein the propelling handle is detachably connected to a handle receiving member pivoted between the rear frame members of the casing, said members having rigid stops which co-act with the frame members in extreme forward and rearward swinging positions of the handle.

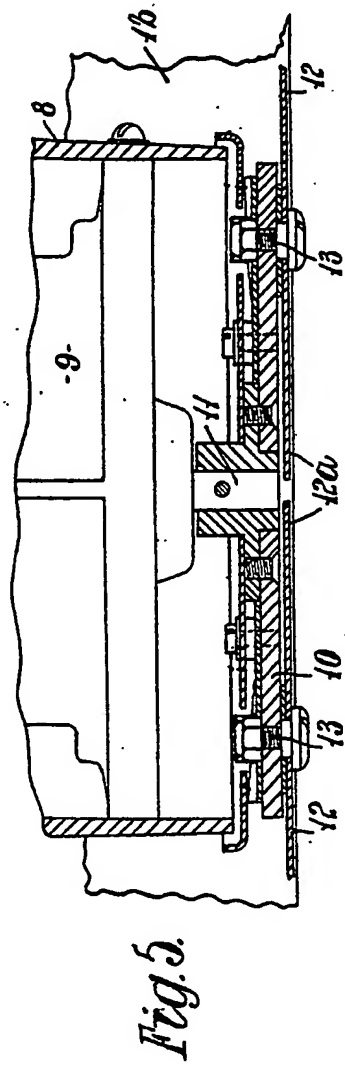
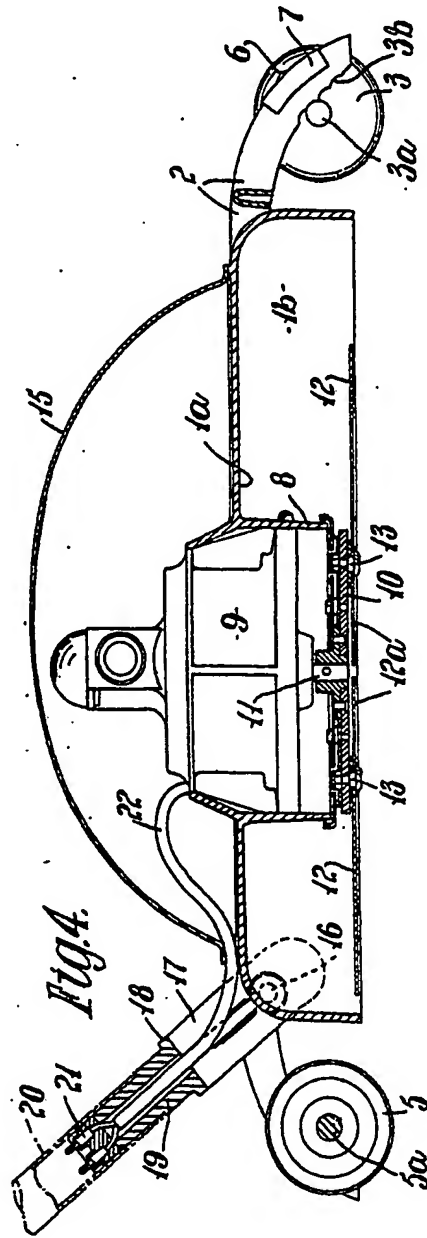
7. A lawn mower of the type referred to constructed substantially as hereinbefore described with reference to the accompanying drawings.

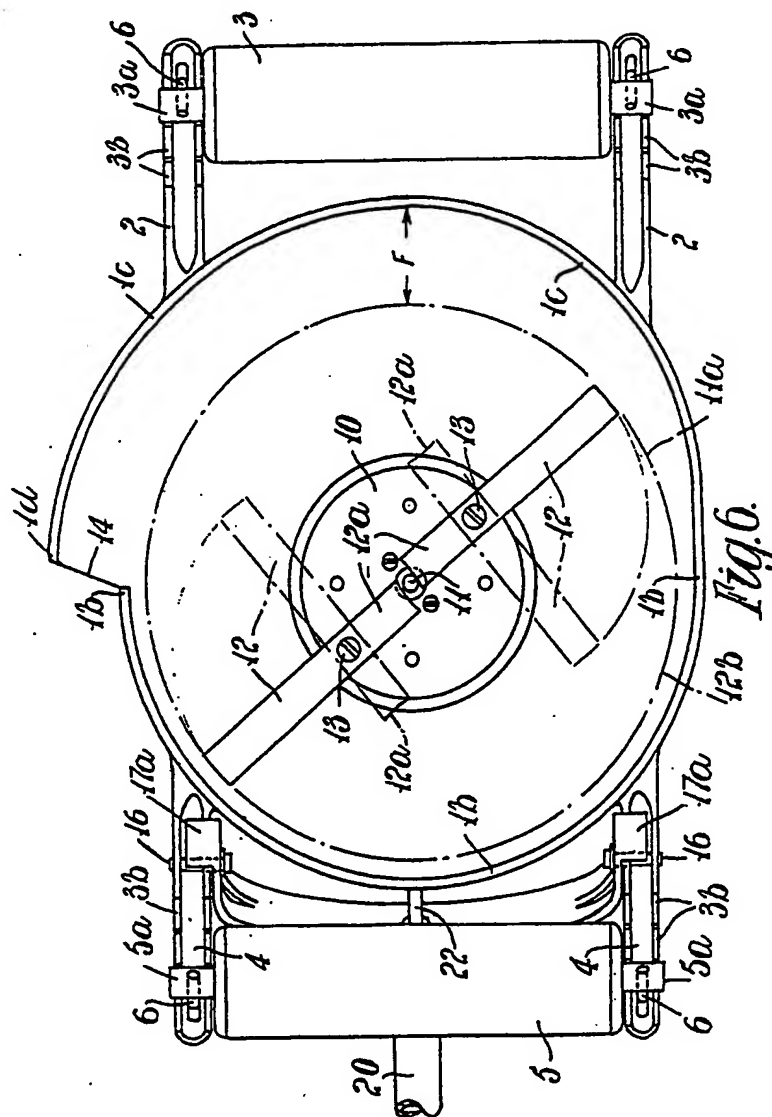
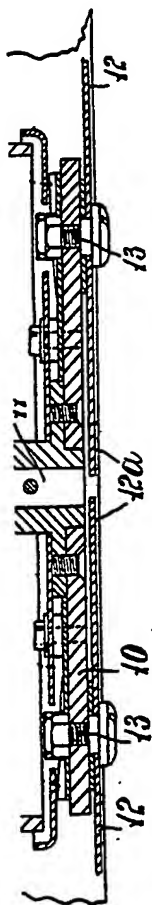
Dated this 11th day of November, 1948.
REGINALD W. BARKER & CO.,
61, Cheapside, London, E.C.2,
Patent Agents for the Applicant.

[This Drawing is a reproduction of the Original on a reduced scale.]



[This Drawing is a reproduction of the Original on a reduced scale.]





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